IN THE CLAIMS:

Please amend Claims 1-3, 6, and 31 - 34 which are currently pending in this application as follows:

1. (Currently Amended) An apparatus for gene examination which comprises a sample preparation instrument ~~(50, 50', 50")~~ comprising one or a plurality of sample preparation units ~~(100, 100')~~ each comprising an upper opening, into which a buffer solution with cells suspended therein is poured, a lower opening, through which a waste liquor is discharged, a channel connecting these openings and provided with a first filter ~~(110)~~ for capturing the cells, a second filter ~~(130)~~ for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the upper opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore and a hydrophobic third filter ~~(140)~~, the three filters being arranged in the channel in that order in the direction from the upper opening to the lower opening, a holding member ~~(200, 200')~~ for holding the sample preparation unit or units and a means ~~(210, 210')~~ for controlling the temperature of the PCR amplification reaction mixture; an irradiation means ~~(370, 380, 385, 31)~~ for irradiating the PCR amplification reaction mixture with a laser beam ~~(380)~~ capable of exciting the fluorophore label labeling the copy in the direction substantially perpendicular or substantially parallel to the second filter; and a detection means ~~(385, 390, 400)~~ for detecting the fluorescence ~~(395)~~ from the fluorophore label labeling the copy in the direction substantially perpendicular to the second filter.

2. (Currently Amended) An apparatus for gene examination as claimed in Claim 1, wherein the sample preparation instrument has a plurality of sample preparation units as defined in Claim 1 disposed along a straight line, the irradiation means irradiates the PCR amplification reaction mixtures in the sample preparation units substantially simultaneously with the laser beam along the straight line in the direction substantially parallel to the second filter in each sample preparation unit, the detection means detects the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units substantially simultaneously in the

direction substantially perpendicular to the second filter in each sample preparation unit and the sites of the holding means which are irradiated with the laser beam are constituted of a material ~~(200")~~ transparent to the wavelength of the laser beam and to the wavelength of the fluorescence.

3. (Currently Amended) An apparatus for gene examination as claimed in Claim 1, wherein the sample preparation instrument has a plurality of lines of a plurality of sample preparation units as defined in Claim 1 disposed along a straight line, the irradiation means irradiates the PCR amplification reaction mixtures in the sample preparation units in each of the lines substantially simultaneously with the laser beam along each straight line in the direction substantially parallel to the second filter in each sample preparation unit, the detection means detects the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in each line of the sample preparation units substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit in each line and the sites of the holding means which are irradiated with the laser beam are constituted of a material ~~(200")~~ transparent to the wavelength of the laser beam and to the wavelength of the fluorescence.

4. (Original) An apparatus for gene examination as claimed in Claim 1, wherein the sample preparation instrument has a plurality of sample preparation units as defined in Claim 1 disposed along a straight line, the irradiation means irradiates the PCR amplification reaction mixtures in the sample preparation units substantially simultaneously with the laser beam in the direction substantially perpendicular to the second filter in each sample preparation unit and the detection means detects the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit.

5. (Original) An apparatus for gene examination as claimed in Claim 1, wherein the sample preparation instrument has a plurality of lines of a plurality of sample preparation units as defined in Claim 1 disposed along a straight line, the irradiation means irradiates the PCR amplification reaction mixtures in the sample preparation units in each of the lines

substantially simultaneously with the laser beam in the direction substantially perpendicular to the second filter in each sample preparation unit in each line and the detection means detects the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in each line of the sample preparation units substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit in each line.

6. (Currently Amended) A sample preparation unit which comprises an upper opening, into which a buffer solution with cells suspended therein is poured, a lower opening, through which a waste liquor is discharged, a channel connecting these openings and is provided with a first filter ~~(110)~~ for capturing the cells, a second filter ~~(130)~~ for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the upper opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, and a hydrophobic third filter ~~(140)~~, the three filters being arranged in the channel in that order in the direction from the upper opening to the lower opening.

7. (Original) A sample preparation unit as claimed in Claim 6, wherein there is a space for holding or retaining the PCR amplification reaction mixture between the first filter and the second filter.

8. (Original) A sample preparation unit as claimed in Claim 6, wherein the second filter has an area smaller than the area of the first filter.

9. (Original) A sample preparation unit as claimed in Claim 6, wherein the second filter is in contact with the third filter.

10. (Original) A sample preparation unit as claimed in Claim 6 which is constituted of a transparent material.

11. (Original) A sample preparation unit as claimed in Claim 6 which has an axis of rotational symmetry.

12. (Original) A sample preparation unit as claimed in Claim 11 the external form of which has a circular or square section perpendicular to the axis of rotational symmetry thereof.

13. (Withdrawn) A method of gene examination using a sample preparation instrument (50, 50', 50") comprising one or a plurality of sample preparation units (100, 100') each having a channel connecting an upper opening with a lower opening and a first filter (110), a second filter (130) and a hydrophobic third filter (140) arranged in the channel in that order in the direction from the upper opening to the lower opening, which method comprises (1) the step of pouring a buffer solution containing cells suspended therein into the upper opening of the sample preparation unit and capturing the cells on the first filter, (2) the step of pouring a denaturing agent into the upper opening and capturing polynucleotides thus eluted from the cells on the second filter, (3) the step of pouring, into the upper opening, a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore to thereby cause the PCR amplification reaction mixture to be held or retained in the second filter and amplifying the copy and (4) the step of irradiating the PCR amplification reaction mixture with a laser beam capable of exciting the fluorophore label labeling the copy for detecting the fluorescence from the fluorophore label.

14. (Withdrawn) A method of gene examination as claimed in Claim 13, wherein the PCR amplification reaction mixture is irradiated with the laser beam in the direction substantially perpendicular or substantially parallel to the second filter and the fluorescence is detected in the direction substantially perpendicular to the second filter.

15. (Withdrawn) A method of gene examination as claimed in Claim 13, wherein the sample preparation instrument has a plurality of sample preparation units as defined in Claim 13 disposed along a straight line, those sites of the holding member which are irradiated with the laser beam are constituted of a material (200") transparent to the wavelength of the laser beam and to the wavelength of the fluorescence, the PCR amplification reaction mixtures in the sample preparation units are irradiated substantially simultaneously with the laser beam along the straight line in the direction substantially parallel to the second

filter in each sample preparation unit and the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units is detected substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit.

16. (Withdrawn) A method of gene examination as claimed in Claim 13, wherein the sample preparation instrument has a plurality of lines of a plurality of sample preparation units as defined in Claim 13 disposed along a straight line, those sites of the holding member which are irradiated with the laser beam are constituted of a material (200") transparent to the wavelength of the laser beam and to the wavelength of the fluorescence, the PCR amplification reaction mixtures in the sample preparation units are irradiated substantially simultaneously with the laser beam along the straight line in each line in the direction substantially parallel to the second filter in each sample preparation unit and the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units in each line is detected substantially simultaneously in the direction substantially parallel to the second filter in each sample preparation unit in each line.

17. (Withdrawn) A method of gene examination as claimed in Claim 13, wherein the sample preparation instrument has a plurality of sample preparation units as defined in Claim 13 disposed along a straight line, the PCR amplification reaction mixtures in the sample preparation units are irradiated substantially simultaneously with the laser beam in the direction substantially perpendicular to the second filter in each sample preparation unit and the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units is detected substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit.

18. (Withdrawn) A method of gene examination as claimed in Claim 13, wherein the sample preparation instrument has a plurality of lines of a plurality of sample preparation units as defined in Claim 13 disposed along a straight line, the PCR amplification reaction mixtures in the sample preparation units in each line are irradiated substantially simultaneously with the laser beam in the direction substantially perpendicular to the

second filter in each sample preparation unit and the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixtures in the sample preparation units in each line is detected substantially simultaneously in the direction substantially perpendicular to the second filter in each sample preparation unit in each line.

19. (Withdrawn) A sample preparation instrument which has a plurality of sample preparation units each comprising a first member (500, 600) having a first opening (511-1, 512-1, 513-1, 514-4; 611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed in the lower part thereof for capturing the cells, a second member (520, 620) having a second opening (511-2, 512-2, 513-2, 514-2; 611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) formed at the top thereof and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (530, 630) having a hydrophobic third filter, and a means (540, 640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above.

20. (Withdrawn) A sample preparation instrument as claimed in Claim 19, wherein the first member, second member and third member are each constituted of a silicon substrate and the pores of the first filer, second filter and third filter are pores formed in the respective silicon substrates.

21. (Withdrawn) A sample preparation instrument as claimed in Claim 19, wherein the second filter has an area smaller than the area of the first filter.

22. (Withdrawn) A sample preparation instrument which has a plurality of sample preparation units each comprising a first member (500) having a first opening (511-1, 512-1, 513-1, 514-1) formed at the top thereof, into which a buffer solution with cells suspended

therein is poured, and a first filter formed in the lower part thereof for capturing the cells, a second member (520) having a second opening (511-2, 512-2, 513-2, 514-2) formed at the top thereof and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (530) having a hydrophobic third filter, a transparent fourth member (510) having a through hole (511-5, 512-5, 513-5, 514-5), and a means (540) for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first filter and the second filter being opposed to each other via the through hole, and the second filter and the third filter being opposed to each other.

23. (Withdrawn) A sample preparation instrument as claimed in Claim 22, wherein the first member, second member and third member are each constituted of a silicon substrate and the pores of the first filer, second filter and third filter are pores formed in the respective silicon substrates.

24. (Withdrawn) A sample preparation instrument as claimed in Claim 22, wherein the second filter has an area smaller than the area of the first filter.

25. (Withdrawn) A sample preparation instrument which comprises a plurality of sample preparation units each comprising a first member (600) having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member (620) having a second opening (611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) at the top thereof and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third

member (630) having a hydrophobic third filter, and a means (640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above, the first through hole and the second opening (611'-2, 612'-2, 613'-2, 614'-2) being opposed to each other, the second filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter.

26. (Withdrawn) A sample preparation instrument as claimed in Claim 25, wherein the first member, second member and third member are each constituted of a silicon substrate and the pores of the first filer, second filter and third filter are pores formed in the respective silicon substrates.

27. (Withdrawn) A sample preparation instrument as claimed in Claim 25, wherein the second filter has an area smaller than the area of the first filter.

28. (Withdrawn) A sample preparation instrument which comprises a plurality of sample preparation units each comprising a first member (600) having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member (620b) having a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (630) having a hydrophobic third filter and a transparent fourth member (620a) having a second through hole (611'-2, 612'-2, 613'-2, 614'-2) and a second opening (611-2, 612-2, 613-2, 614-2) at the top, and a means (640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first through hole and the second filter being opposed to each other via the second through hole, the second filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter.

29. (Withdrawn) A sample preparation instrument as claimed in Claim 28, wherein the first member, second member and third member are each constituted of a silicon substrate and the pores of the first filer, second filter and third filter are pores formed in the respective silicon substrates.

30. (Withdrawn) A sample preparation instrument as claimed in Claim 28, wherein the second filter has an area smaller than the area of the first filter.

31. (Currently Amended) An apparatus for gene examination which comprises a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member ~~(500, 600)~~ having a plurality of first regions each formed therein and having a first opening ~~(511-1, 512-1, 513-1, 514-1; 611-1, 612-1, 613-1, 614-1)~~ formed at the top, into which a buffer solution with cells suspended therein is poured, and a first filter formed in the lower part for capturing the cells, a second member ~~(520, 620)~~ having a plurality of second regions each formed therein and having a second opening (~~511-2, 512-2, 513-2, 514-2; 611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2~~) at the top and a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, a third member ~~(530, 630)~~ having a plurality of third regions each formed therein and having a hydrophobic third filter, and means ~~(540, 640)~~ for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above; an irradiation means for irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam [[380]] capable of exciting the fluorophore label labeling the copy in the direction substantially perpendicular to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units; and a detection means for detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each

sample preparation unit in the direction substantially perpendicular to the second filter.

32. (Currently Amended) An apparatus for gene examination which comprises a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member ~~(500)~~ having a plurality of first regions each formed therein and having a first opening ~~(511-1, 512-1, 513-1, 514-1)~~ formed at the top, into which a buffer solution with cells suspended therein is poured, and a first filter formed in the lower part for capturing the cells, a second member ~~(520)~~ having a plurality of second regions each formed therein and having a second opening ~~(511-2, 512-2, 513-2, 514-2)~~ at the top and a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, a third member ~~(530)~~ having a plurality of third regions each formed therein and having a hydrophobic third filter, a transparent fourth member ~~(510)~~ having a plurality of fourth regions each having a through hole ~~(511-5, 512-5, 513-5, 514-5)~~ formed therein, and a means ~~(540)~~ for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first filter and the second filter being opposed to each other via the through hole, and the second filter and the third filter being opposed to each other; an irradiation means for irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam capable of exciting the fluorophore label labeling the copy in the direction substantially parallel to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units; and a detection means for detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter.

33. (Currently Amended) An apparatus for gene examination which comprises a sample preparation instrument comprising a plurality of sample preparation units, each having

a first, a second, a third and a fourth region, and thus comprising a first member ~~(600)~~ having a plurality of first regions each formed therein and having a first through hole ~~(601, 602, 603, 604)~~, a first opening ~~(611-1, 612-1, 613-1, 614-1)~~ formed at the top, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member ~~(620)~~ having a plurality of second regions each formed therein and having a second opening ~~(611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2)~~ at the top and a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, a third member ~~(630)~~ having a plurality of third regions each formed therein and having a hydrophobic third filter, and a means ~~(640)~~ for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above, the first through hole and the second opening ~~(611'-2, 612'-2, 613'-2, 614'-2)~~ being opposed to each other, the second filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter; an irradiation means for irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam ~~(380)~~ capable of exciting the fluorophore label labeling the copy in the direction substantially perpendicular to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units; and a detection means for detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter.

34. (Currently Amended) An apparatus for gene examination which comprises a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member ~~(600)~~ having a plurality of first regions each formed therein and having a through hole ~~(601, 602, 603, 604)~~, a first opening ~~(611-1, 612-1, 613-1, 614-1)~~ formed at the top, into which a buffer solution with cells suspended therein is poured, and a first filter formed below

the first opening for capturing the cells, a second member ~~(620b)~~ having a plurality of second regions each formed therein and having a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured into the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, a third member ~~(630)~~ having a plurality of third regions each formed therein and having a hydrophobic third filter, a transparent fourth member ~~(620a)~~ having a plurality of fourth regions each formed therein and having a through hole ~~(611'-2, 612'-2, 613'-2, 614'-2)~~ and a second opening ~~(611-2, 612-2, 613-2, 614-2)~~ at the top, and a means ~~(640)~~ for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first through hole and the second filter being opposed to each other via the second through hole, the second filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter; an irradiation means for irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam ~~(380)~~ capable of exciting the fluorophore label labeling the copy in the PCR reaction mixture in the direction substantially parallel to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units; and a detection means for detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter.

35. (Withdrawn) A method of gene examination using a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second and a third region, and thus comprising a first member (500, 600) having a plurality of first regions each formed therein and having a first opening (511-1, 512-1, 513-1, 514-1; 611-1, 612-1, 613-1, 614-1) formed at the top and a first filter formed in the lower part thereof, a second member (520, 620) having a plurality of second regions each formed therein and having a second opening (511-2, 512-2, 513-2, 514-2; 611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) formed at the top and a second filter in the lower

part thereof and a third member (530, 630) having a plurality of third regions each formed therein and having a hydrophobic third filter, with the first member, the second member and the third member being arranged in that order from above, which method comprises (1) the step of pouring a buffer solution with cells suspended therein into the first opening and capturing the cells on the first filter, (2) the step of pouring a denaturing agent into the first opening and capturing polynucleotides thereby eluted from the cells on the second filter, (3) pouring a PCT amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, into the first opening, allowing the PCR amplification reaction mixture to be held or retained by the second filter and amplifying the copy, (4) the step of irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam 380 capable of exciting the fluorophore label labeling the copy in the direction substantially perpendicular to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units and (5) the step of detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter.

36. (Withdrawn) A method of gene examination using a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member (500) having a plurality of first regions each formed therein and having a first opening (511-1, 512-1, 513-1, 514-1) formed at the top and a first filter formed in the lower part thereof, a second member (520) having a plurality of second regions each formed therein and having a second opening (511-2, 512-2, 513-2, 514-2) at the top and a second filter in the lower part thereof, a third member (530) having a plurality of third regions each formed therein and having a hydrophobic third filter and a transparent fourth member (510) having a plurality of fourth regions each formed therein and having a through hole (511-5, 512-5, 513-5, 514-5), with the first member, the fourth member, the second member and the third member being arranged in that order from above, the first filter and the second filter being opposed to each other via the through hole and the second filter and the third filter

being opposed to each other, which method comprises (1) the step of pouring a buffer solution with cells suspended therein into the first opening and capturing the cells on the first filter, (2) the step of pouring a denaturing agent into the first opening and capturing polynucleotides thereby eluted from the cells on the second filter, (3) pouring a PCT amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, into the first opening, allowing the PCR amplification reaction mixture to be held or retained and amplifying the copy, (4) the step of irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam 380 capable of exciting the fluorophore label labeling the copy in the PCR amplification mixture in each sample preparation unit in the direction substantially parallel to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units and (5) the step of detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter in each sample preparation unit.

37. (Withdrawn) A method of gene examination using a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second and a third region, and thus comprising a first member (600) having a plurality of first regions each formed therein and having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top and a first filter formed below the first opening, a second member (620) having a plurality of second regions each formed therein and having a second opening (611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) at the top and a second filter in the lower part thereof and a third member (630) having a plurality of third regions each formed therein and having a hydrophobic third filter, with the first member, the second member and the third member being arranged in that order from above, the first through hole and the second opening (611'-2, 612'-2, 613'-2, 614'-2) being opposed to each other, the second filter and the third filter being opposed to each other and a channel being formed for connecting the first filter to the second filter, which method comprises (1) the step of pouring a buffer solution with cells suspended therein into the first opening and capturing the cells on the first filter, (2) the step of pouring a

denaturing agent into the first opening and capturing polynucleotides thereby eluted from the cells on the second filter, (3) pouring a PCT amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, into the first opening, allowing the PCR amplification reaction mixture to be held or retained and amplifying the copy, (4) the step of irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam (380) capable of exciting the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units and (5) the step of detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter in each sample preparation unit.

38. (Withdrawn) A method of gene examination using a sample preparation instrument comprising a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member (600) having a plurality of first regions each formed therein and having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member (620b) having a plurality of second regions each formed therein and having a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured from the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (630) having a plurality of third regions each formed therein and having a hydrophobic third filter and a transparent fourth member (620a) having a plurality of fourth regions each formed therein and having a second through hole (611'-2, 612'-2, 613'-2, 614'-2) and a second opening (611-2, 612-2, 613-2, 614-2) at the top, with the first member, the fourth member the second member and the third member being arranged in that order

from above, the first through hole and the second filter being opposed to each other via the second through hole, the second filter and the third filter being opposed to each other and a channel being formed for connecting the first filter to the second filter, which method comprises (1) the step of pouring a buffer solution with cells suspended therein into the first opening and capturing the cells on the first filter, (2) the step of pouring a denaturing agent into the first opening and capturing polynucleotides thereby eluted from the cells on the second filter, (3) pouring a PCT amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial target base sequence in the polynucleotides captured, inclusive of a PCR primer labeled with a fluorophore, into the first opening, allowing the PCR amplification reaction mixture to be held or retained and amplifying the copy, (4) the step of irradiating the PCR amplification reaction mixture in each sample preparation unit with a laser beam (380) capable of exciting the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially parallel to the second filter in each sample preparation unit substantially simultaneously for the plurality of sample preparation units and (5) the step of detecting, substantially simultaneously for the plurality of sample preparation units, the fluorescence from the fluorophore label labeling the copy in the PCR amplification reaction mixture in each sample preparation unit in the direction substantially perpendicular to the second filter.

39. (Withdrawn) A sample preparation instrument which has a plurality of sample preparation units, each having a first, a second and a third region, and thus comprising a first member (500, 600) having a plurality of first regions each formed therein and having a first opening (511-1, 512-1, 513-1, 514-1; 611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed in the lower part thereof for capturing the cells, a second member (520, 620) having a plurality of second regions each formed therein and having a second opening (511-2, 512-2, 513-2, 514-2; 611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) formed at the top thereof and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a

fluorophore, a third member (530, 630) having a plurality of third regions each formed therein and having a hydrophobic third filter, and a means (540, 640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above.

40. (Withdrawn) A sample preparation instrument which comprises a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member (500) having a plurality of first regions each formed therein and having a first opening (511-1, 512-1, 513-1, 514-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed in the lower part thereof for capturing the cells, a second member (520) having a plurality of second regions each formed therein and having a second opening (511-2, 512-2, 513-2, 514-2) at the top thereof and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (530) having a plurality of third regions each formed therein and having a hydrophobic third filter, a transparent fourth member (510) having a plurality of fourth regions each formed therein and having a through hole (511-5, 512-5, 513-5, 514-5), and a means (540) for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first filter and the second filter being opposed to each other via the through hole, and the second filter and the third filter being opposed to each other.

41. (Withdrawn) A sample preparation instrument which comprises a plurality of sample preparation units, each having a first, a second and a third region, and thus comprising a first member (600) having a plurality of first regions each formed therein and having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member (620) having a plurality of second regions each formed therein and having a

second opening (611-2, 612-2, 613-2, 614-2; 611'-2, 612'-2, 613'-2, 614'-2) at the top and a second filter, in the lower part thereof, for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (630) having a plurality of third regions each formed therein and having a hydrophobic third filter, and a means (640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the second member and the third member being arranged in that order from above, the first through hole and the second opening (611'-2, 612'-2, 613'-2, 614'-2) being opposed to each other, the second filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter.

42. (Withdrawn) A sample preparation instrument which comprises a plurality of sample preparation units, each having a first, a second, a third and a fourth region, and thus comprising a first member (600) having a plurality of first regions each formed therein and having a first through hole (601, 602, 603, 604), a first opening (611-1, 612-1, 613-1, 614-1) formed at the top thereof, into which a buffer solution with cells suspended therein is poured, and a first filter formed below the first opening for capturing the cells, a second member (620b) having a plurality of second regions each formed therein and having a second filter for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, a third member (630) having a plurality of third regions each formed therein and having a hydrophobic third filter, a transparent fourth member (620a) having a plurality of fourth regions each formed therein and having a second through hole (611'-2, 612'-2, 613'-2, 614'-2) and a second opening (611-2, 612-2, 613-2, 614-2) at the top, and a means (640) for controlling the temperature of the PCR amplification reaction mixture, the first member, the fourth member, the second member and the third member being arranged in that order from above, the first through hole and the second filter being opposed to each other via the second through hole, the second

filter and the third filter being opposed to each other, and a channel being formed for connecting the first filter to the second filter.

43. (Withdrawn) A sample preparation instrument which comprises a sample preparation unit (100) having an upper opening, into which a buffer solution with cells suspended therein is poured, a lower opening for discharging a waste liquor, a channel connecting the openings, a first filter (110) for capturing the cells, a second filter (130) for capturing polynucleotides eluted from the cells by means of a denaturing agent poured through the first opening and holding or retaining a PCR amplification reaction mixture containing reagents for the PCR amplification reaction for amplifying the copy of a desired partial base sequence in the polynucleotides, inclusive of a PCR primer labeled with a fluorophore, and a hydrophobic third filter (140), the filters being arranged in that order in the channel in the direction from the upper opening to the lower opening; a holding member (200) for holding the sample preparation unit; and a means (210) for controlling the temperature of the PCR amplification reaction mixture.